Docket 85538AJA
Customer No. 01333

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

Paul B. Merkel et al

Image-Recording Element With Fluorosurfactant And Colloidal Particles

Serial No. 10/622,421

Filed 18 July 2003

Group Art Unit: 1774

Examiner: Pamela R. Schwartz

Mail Stop APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDED APPEAL BRIEF PURSUANT TO 37 C.F.R. 41.37 IN RESPONSE TO NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF

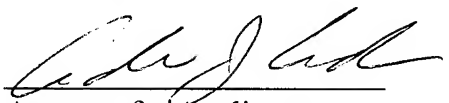
In response to the Notification of Non-compliant Appeal Brief mailed June 12, 2007, submitted herewith is an amended Appeal Brief which corrects the defects noted.

In response to the requirement that the status of claims must indicate the status of all claims filed, such amended Appeal Brief now identifies claims 2, 3, and 5 as being cancelled.

The Notice also alleges that the originally filed Brief does not contain "required headings under 37 CFR 41.37". It is noted, however, that 37 CFR 41.37(c)(1) does not require any specific headings, but rather only requires that the Brief contain specified items under "appropriate" headings. A review of the headings employed in the originally filed brief fails to reveal any headings that do not appear to be appropriate relative to the subject matter thereof, and the Notification of Non-compliant Brief itself fails to identify any heading which the Office believes not to be "appropriate" as required by 37 CFR 41.37. Reconsideration of this objection is accordingly respectfully requested. Absent a decision to drop such objection, it is

alternatively respectfully requested that the Office specifically identify which heading is believed not to be "appropriate" as required by 37 CFR 41.37.

Respectfully submitted,



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Real Party In Interest

Eastman Kodak Company is assignee and the real party in interest.

Related Appeals And Interferences

No appeals or interferences are known which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

Status Of The Claims

Claims 1, 4, and 6-34 are pending in the application.

Claims 2, 3, and 5 have been cancelled.

Claims 9, 10 and 16-21 are withdrawn from consideration.

Claims 13-15 have been objected to (indicated as being allowable but dependent upon a rejected claim).

Claims 1, 4, 6-8, 11-12 and 22-34 stand rejected under 35 USC § 103.

Claims 1, 4, 6-8, 11-12 and 22-34 are being appealed.

Appendix I provides a clean, double spaced copy of the claims on appeal.

Status Of Amendments

An amendment was filed January 23, 2007 in response to the final rejection mailed September 26, 2006.

Summary Of Claimed Subject Matter

Independent claim 1 is directed towards a porous image-recording element (page 2, lines 8-17) comprising a support (page 16, line 23 to page 17, line 19) and an image-receiving layer, wherein said imaging receiving layer comprises anionic colloidal silica particles (page 5, lines 8-11; page 5, lines 24-28; page 15, lines 28-30), hydrophilic polymeric binder (page 5, line 29 to page 6, line 18), and fluorosurfactant (page 6, line 19 to page 14, line 6), wherein said binder is present in an amount of between 2% and 15% by weight of said image-receiving layer (page 3,

lines 27-28), said image-recording element has a 60-degree gloss of greater than 25 (page 3, lines 28-29; page 24, lines 4-7), and a dry time of less than 1 minute (page 3, line 29; page 25, lines 4-13), wherein said anionic colloidal silica particles have a median diameter of between 80 and 200 nm (page 5, lines 11-14), wherein at least 80% of said anionic colloidal silica particles have a diameter of within 35% smaller or larger than the median diameter of said anionic colloidal silica particles (page 5, lines 14-20). The invention provides a porous inkjet image-recording element that exhibits the combined advantages of high gloss, fast dry time, good image quality, and improved coating quality (page 4, lines 1-5; page 30, Table VII).

Grounds Of Rejection To Be Reviewed On Appeal

1. Claims 1, 4, 6-8, 11, 12, 22-29 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano et al. (6,919,109) "taken alone" or further in view of Tsuchiya et al (6,495,242).

2. Claims 1, 4, 6-8, 11, 12, and 22-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano et al. (6,919,109) in view of Tsuchiya et al (6,495,242) and further in view of Niu et al (6,689,433).

3. Claims 1, 4, 6-8, 11, 12, and 22-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya et al (6,495,242).

4. Claims 1 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya et al (6,495,242) in view of Nakano et al. (6,919,109).

Arguments

Obviousness Rejection of Claims 1, 4, 6-8, 11, 12, 22-29, and 34 over Nakano et al alone or in view of Tsuchiya et al

Regarding the rejection based on Nakano et al alone, independent claim 1 of the present claimed invention is directed towards an image recording element including an image receiving layer which comprises anionic colloidal silica particles. There is no such teaching or suggestion of use of anionic colloidal silica particles in the accepting layer taught by Nakano et al. To the contrary, Nakano et al teach the use of a fine silica particles treated with a cationic polymer surface-modifier (dispersing agent, col. 8, lines 9-12, and all examples). As described in the paragraph

bridging pages 15-16 of the specification, dispersions of anionic colloidal silica as employed in the present invention typically have a pH between 8-10 in order to maintain colloidal stability, as such anionic particles would excessively agglomerate under acidic conditions. Quite to the contrary, the coating solutions containing the cationic surface-modified particles of Nakano et al are expressly taught as being acidic solutions (e.g., col. 27, lines 47-49). While Nakano et al. does teach the use of a separate basic solution "B" which may be applied to the acidic accepting layer coating solution "A" to facilitate cross-linking of the binder polymer of the accepting layer (col. 22, line 35 to col. 24, line 60), the silica particles of Nakano et al are not contained in such separate basic coating solution "B". Nakano et al rather specifically teaches that mixing of such acidic accepting layer coating solution "A" and basic cross-linking solution "B" is to be avoided (col. 24, lines 42-51). Nakano et al thus clearly fails to teach the use of an image receiving or accepting layer comprising anionic colloidal silica particles, and the rejection of the present claimed invention based on the teachings of Nakano et al is accordingly in clear error on this point alone.

The present claimed invention is limited to anionic colloidal silica particles with a median diameter of between 80 and 200 nm and a narrow size distribution such that at least 80% of said anionic colloidal silica particles have a diameter of within 35% smaller or larger than the median diameter of said anionic colloidal silica particles. While the Examiner acknowledges that Nakano et al. disclose preferred colloidal silica particles with a diameter of 50 nm or less as preferable particles to achieve the goals of the reference (i.e. rapid drying and gloss), the Examiner alleges that this disclosure would suggest (for some unidentified reason) particles of a broader range to one of ordinary skill in the art, and that it would have been obvious to one of ordinary skill in the art to optimize the desired properties taught by the prior art, i.e. drying time and gloss, through determination of a commercially available colloidal silica. The Examiner has not identified any basis for such alleged "obviousness", however, especially in view of the express teaching in Nakano et al that the use of the particles of Nakano et al that are outside the particle size range of the present claimed invention is preferred by Nakano et al in order to optimize the same relevant properties.

Table VII on page 30 in the specification of the present application demonstrates that the use of anionic colloidal particles having the claimed particle size

and narrow size distribution provides the advantages of higher gloss, faster dry time, good image quality, and improved coating quality. The Comparative examples provided in the present specification clearly demonstrate the advantage of the claimed invention relative to the use of smaller particles when employing anionic colloidal particle dispersions, even when the relatively smaller particles also have relatively narrow size distributions (see, e.g., Comparative Elements 11 and 12). The criticality of the claimed particle size parameter in the present claimed invention relative to the teachings of Nakano et al is thus clearly demonstrated, and the Examiner's comment that such criticality cannot be evaluated is without merit. The Examiner's contention that selection of the claimed combination of parameters would have been obvious to one of ordinary skill in the art based on the teaching of Nakano et al is thus entirely unsupported, and represents further clear error.

With respect to the Examiner's rejection based on further reliance upon Tsuchiya et al as a secondary reference, such rejections also represent clear error, as Tsuchiya et al fails to overcome the deficiencies of the Nakano et al reference as well as to itself establish a prima facie case of obviousness, as it also does not teach or suggest use of anionic colloidal silica particles. Rather, while the disclosed particle size and dispersion degree of the fine particles employed in Tsuchiya et al may overlap with the required anionic colloidal silica particle size and size distribution of the present claimed invention, Tsuchiya et al, similar to Nakano et al., teaches the use of silica particles dispersed with a cationic polymer P-1 (col. 11, lines 10-12) in an acidic solution (col. 11, line 3). As explained above with respect to Nakano et al. such acidic solutions are not compatible with the use of anionic colloidal silica particle dispersions, and it is accordingly clear that the Tsuchiya et al. is also directed towards a different system than that of the present claimed invention employing different type of silica particles. Applicants' examples as discussed above have demonstrated the criticality of the claimed particle size relative for anionic colloidal silica particles to comparison particles of a size also taught as useful for the particular type of particles employed in Tsuchiya et al (i.e., less than 80 nm). Accordingly, Applicants have demonstrated the unobviousness of the present invention, and a prima facie case of obviousness has clearly not been established.

Obviousness Rejection of Claims 1, 4-8, 11, 12, and 22-34 over Nakano et al in view of Tsuchiya et al and Niu et al

Regarding all rejected claims, such rejection represents further clear error relative to the basic rejection over Nakato et al in view of Tsuchiya et al as Niu et al fails to overcome the deficiencies of the primary references relative to the present claimed invention, as Niu et al fails to teach or suggest the combined requirements of the present claimed invention (combination of anionic colloidal silica particles of specified size and size distribution, hydrophilic polymeric binder with specified binder weight percent, fluorosurfactant, 60-degree gloss, and a dry time of less than 1 minute) which have been taught to enable the advantages of higher gloss, faster dry time, good image quality, and improved coating quality. While Niu et al teaches that silica may be included as an "other pigment" in an ink-receiving layer, the the Examiner has not in any way established a prima facie case of obviousness as to how Niu et al would be combined with the primary references by one skilled in the art to arrive at the present claimed invention. Specifically, Niu et al does not teach a porous layer having only from 2-15% binder and a short dry time of less than 1 minute, but rather employs a relatively high level of binder (55-100% by weight at column 20, lines 23-29) which will inherently result in long dry times (see, e.g., page 5, lines 2-7 of present specification). Niu (col. 21, lines 36-65) further discloses a preferred silica particle size of 300 to 400 nm, distinct from the teachings of either of Nakato et al and Tsuchiya et al., as well as from the present claimed invention. There is clearly no disclosure or suggestion in any combination of Niu et al. and Nakano and/or Tsuchiya et al that would lead one to the instantly claimed invention. In particular, there is no teaching in Niu et al. that would lead one to modify Nakano et al. and/or Tsuchiya et al to reach the invention. Therefore, the proposed rejection clearly represents further clear error.

Additionally regarding claim 33, the rejection is further in clear error as while Niu discloses at col. 23, lines 55+ that a pH modifier may be employed to achieve a desired pH level, Niu et al expressly states that a pH of 3-6 is preferred, and Nakato et al (e.g., col. 27, lines 47-49) and Tsuchiya et al (col. 11, line 3) similarly disclose uswe of acidic pH conditions. The present invention (see, e.g., paragraph briding pages 15-16 of the specification), on the other hand, teaches that a basic pH of between 8-10 advantageously maintains colloidal stability of the anionic colloidal particles employed in the present invention, while not causing the particles to dissolve. As such pH range

is not taught or suggested for any reason for the particle dispersions actually employed in the applied references, there is no support for the Examiner's mere allegation that such claimed invention would be obvious in view of such references.

Obviousness Rejection of Claims 1, 4, 6-8, 11, 12, and 22-34 over Tsuchiya et al

Regarding all rejected claims, as discussed above with respect to the rejction based on Nakato et al in view of Tsuchiya e tal, Tsuchiya et al itself fails to establish a prima facie case of obviousness, as it also does not teach or suggest use of anionic colloidal silica particles. Rather, while the disclosed particle size and dispersion degree of the fine particles employed in Tsuchiya et al may overlap with the required anionic colloidal silica particle size and size distribution of the present claimed invention, Tsuchiya et al, similar to Nakano et al., teaches the use of silica particles dispersed with a cationic polymer P-1 (col. 11, lines 10-12) in an acidic solution (col. 11, line 3). As explained above such acidic solutions are not compatible with the use of anionic colloidal silica particle dispersions, and it is accordingly clear that the Tsuchiya et al. is also directed towards a different system than that of the present claimed invention employing different type of silica particles. pplicants' examples as discussed above have demonstrated the criticality of the claimed particle size relative for anionic colloidal silica particles to comparison particles of a size also taught as useful for the particular type of particles employed in Tsuchiya et al (i.e., less than 80 nm). Accordingly, Applicants have demonstrated the unobviousness of the present invention, and a prima facie case of obviousness has clearly not been established.

Additionally regarding claim 33, in view of the disclosure of the use of acidic pHs at col. 11, lines 1-25, it is also clear that there is no support for the Examiner's allegations that Tsuchiya et al does not disclose the pH of the surface layer, and that there is accordingly further no support for the Examiner's allegations that it would have been obvious to control the pH of the coating layers in accordance with the pH requirements of claim 33, which as explained above is particularly advantageous in the present invention. Rejection of this claim accordingly represents further clear error.

Obviousness Rejection of Claims 1 and 33 over Tsuchiya et al in view of Nakano et al

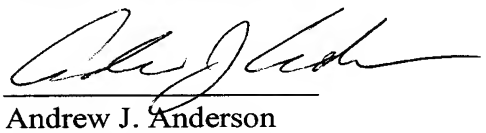
Regarding the rejection of claim 1, a prima facie case of obviousness has clearly not been established based on the arguments with respect to the deficiencies of Tsuchiya et al and Nakano et al as explained above.

Regarding the rejection of claim 33, as further explained above, while Nakano et al. does teach the use of a separate basic solution "B" which may be applied to the acidic accepting layer coating solution "A" to facilitate cross-linking of the binder polymer of the accepting layer (col. 22, line 35 to col. 24, line 60), the silica particles of Nakano et al are not contained in such separate basic coating solution "B". Nakano et al rather specifically teaches that mixing of such acidic accepting layer coating solution "A" and basic cross-linking solution "B" is to be avoided (col. 24, lines 42-51). Thus, there is no support for the Examiner's allegation that Nakano et al teaches that the image receiving layer itself is coated at a pH of 8 or higher, and there is accordingly no basis for the allegation that it would have been obvious to employ such pH in the receiving layer of Tsuchiya et al in view of Nakano et al. This rejection accordingly represents further clear error.

Conclusion

For the above reasons, Appellants respectfully request that the Board of Patent Appeals and Interferences reverse the rejection by the Examiner and mandate the allowance of Claims 1, 4, 6-8, 11-12, and 22-34, along with additional dependent objected-to claims 13-15.

Respectfully submitted,



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If the Examiner is unable to reach the Applicant(s) Attorney at the telephone number provided, the Examiner is requested to communicate with Eastman Kodak Company Patent Operations at (585) 477-4656.

Appendix I - Claims on Appeal

1. A porous image-recording element comprising a support and an image-receiving layer, wherein said imaging receiving layer comprises anionic colloidal silica particles, hydrophilic polymeric binder, and fluorosurfactant, wherein said binder is present in an amount of between 2% and 15% by weight of said image-receiving layer, said image-recording element has a 60-degree gloss of greater than 25, and a dry time of less than 1 minute, wherein said anionic colloidal silica particles have a median diameter of between 80 and 200 nm, wherein at least 80% of said anionic colloidal silica particles have a diameter of within 35% smaller or larger than the median diameter of said anionic colloidal silica particles.

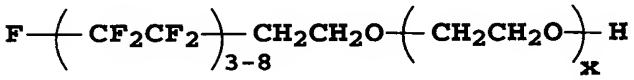
4. The image-recording element of claim 1 wherein the counterion for said anionic colloidal silica particles comprises potassium.

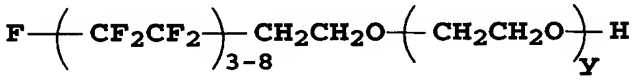
6. The image-recording element of claim 1 wherein said hydrophilic polymeric binder is poly(vinyl alcohol).

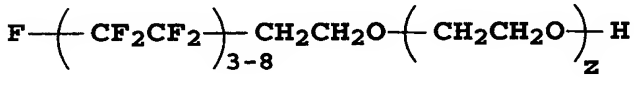
7. The image-recording element of claim 1 wherein said hydrophilic polymeric binder is poly(vinyl alcohol) having a percent hydrolysis of 77 to 90.

8. The image-recording element of claim 1 wherein said hydrophilic polymeric binder is poly(vinyl alcohol) having a viscosity for a 4% aqueous solution at 20° C of 2.5 to 12 cps.

11. The image-recording element of claim 1 wherein said fluorosurfactant is selected from at least one member of the group consisting of:



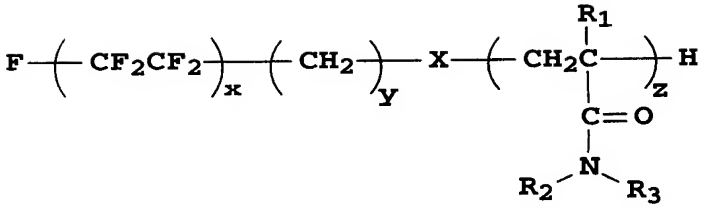




wherein x < y < z and x, y, and z are between 0 and 25 and wherein the distribution of the perfluoroethylene units in the perfluorinated portion of the three surfactants is different.

12. The image-recording element of claim 1 wherein said fluorosurfactant comprises polymeric fluorosurfactants.

13. The image-recording element of claim 1 wherein said fluorosurfactant comprises an oligomeric acrylamide of the general formula I:



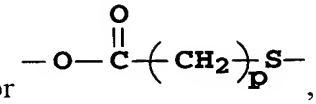
I

wherein

x is 2 to 8;

y is 2 to 6;

z is 5 to 60;

X is S or  , where p is 1 to 3;

R_1 is H or C_1-C_3 alkyl;

R_2 and R_3 can be any of the following combinations:

R_2 and R_3 each independently represent an unsubstituted or substituted alkyl or aryl group,

R_2 is H and R_3 is an isopropyl group, or

R_2 and R_3, together with the adjacent N atom, form a heterocyclic ring.

14. The image-recording element of claim 13 wherein

x is 3 or 4;

y is 2 or 3;

z is 5 to 15;

X is S;

R_1 is H; and

R_2 and R_3 can be any of the following combinations:

R_2 and R_3 each independently represent a methyl or ethyl group, or R_2 is H and R_3 is an isopropyl group.

15. The image-recording element of claim 13 wherein

x is 3 or 4;

y is 2;

z is 5 to 10;

X is S;

R_1 is H; and

R_2 and R_3 are methyl groups.

22. The image-recording element of claim 1 wherein said fluorosurfactant comprises between 0.05% and 3% of said image-receiving layer by weight.

23. The image-recording element of claim 1 wherein said image-receiving layer further comprises a latex polymer having a glass transition temperature of less than 30° C.

24. The image-recording element of claim 23 wherein said latex polymer is present in an amount of between 4% and 15% by weight of said image-receiving layer.

25. The image-recording element of claim 1 wherein said image-receiving layer further comprises a hardener.

26. The image-recording element of claim 1 wherein said image-receiving layer comprises borax; boric acid or its salts; 1,4-dioxane-2,3-diol; glyoxal; or bis(vinylsulfonyl)methane as a hardener.

27. The image-recording element of claim 1 wherein said support is nonporous and said image-receiving layer has a total coverage 35 and 65 g/m^2.

28. The image-recording element of claim 1 wherein said support is porous and said image-receiving layer has a total coverage of between 4 and 30 g/m^2.

29. The image-recording element of claim 1 wherein said support is porous and said image-receiving layer has a total coverage of between 6 and 20 g/m^2.

30. The image-recording element of claim 1 wherein an ink-absorbing layer is present between said support and said image-receiving layer.

31. The image-recording element of claim 30 wherein said ink-absorbing layer is porous, and said image-receiving layer has a total coverage of between 4 and 30 g/m^2.

32. The image-recording element of claim 30 wherein said ink-absorbing layer is porous, and said image-receiving layer has a total coverage of between 6 and 20 g/m^2.

33. The image-recording element of claim 1 wherein the surface pH of said image-receiving layer moistened with water is between 8 and 10.

34. The image-recording element of claim 1 wherein said image-recording element comprises an inkjet image-recording element.

Appendix II - Evidence

NONE

Appendix III – Related Proceedings

NONE